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Nonlinear gas oscillations in an open tube under anharmonic excitation

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Abstract

Nonlinear gas oscillations excited in a tube with an open end by a piston driven by a crank mechanism are investigated. For the open end of the tube, a nonlinear boundary condition is formulated with allowance for oscillations at the subharmonic resonance frequency. Both first- and second-order approximations to the oscillations at the fundamental frequency and at half this frequency are calculated. The results of theoretical calculations are compared with experimental data. © 2014 Pleiades Publishing, Ltd.

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Keywords

oscillations, pressure, subharmonic resonance, tube, velocity